

AMENDMENTS TO THE CLAIMS

The following listing of the claims replaces and supersedes all previous listings.

Listing of Claims:

1. (Currently Amended) Rechargeable electrochemical battery cell having a negative electrode, an electrolyte based on sulfur dioxide, and a positive electrode, the negative electrode comprising an electronically conductive substrate on which an active mass is electrolytically deposited when charging the cell, wherein

the battery cell comprises a porous structure contacting the substrate of the negative electrode,

the porous structure is determined by the size and shape of structure-forming solid particles, the material of which is not an ionically dissociating material,

the volume proportion of the solid particles in the porous structure is at least 40%, and

the porous structure is formed and positioned in such a manner that the active mass deposited during charging of the cell penetrates from the surface of the substrate into its pores and is further deposited therein.

2. (Cancelled)

3. (Previously Presented) Battery cell according to claim 1, characterized in that, in order to increase the bulk density, the shape of the solid particles (17) which form the porous structure (16) approximates a spherical shape.

4. (Previously Presented) Battery cell according to claim 1, characterized in that the porous structure (16) contains at least two fractions of structure-forming solid particles (23,24) having different average particle sizes and the particle sizes of the fractions are adapted to one another in such a manner that an increased volume proportion of the particles results.

5. (Previously Presented) Battery cell according to claim 1, characterized in that the substrate (14) is sheet-shaped and is positioned parallel to a sheet-shaped separator (11) which separates the negative electrode from a positive electrode, and the porous structure (16) completely fills the space between the substrate (14) and the separator (11) in such a manner that there are no cavities in which accumulations of the mass (15) deposited during charging the cell could form and which are substantially larger than the pores (18) of the porous structure (16).

6. (Previously Presented) Battery cell according to claim 1, characterized in that the material of the solid particles (17) of the porous structure (16) is inert relative to the electrolyte, its overcharge products, and the active mass.

7. (Original) Battery cell according to claim 6, characterized in that the material is a ceramic powder.

8. (Cancelled)

9. (Previously Presented) Battery cell according to claim 1, characterized in that the solid particles of the porous structure have a melting point of at least 200° C.

10. (Previously Presented) Battery cell according to claim 1, characterized in that the material of the solid particles of the porous structure has a thermal conductivity of at least 5 W/mK.

11. (Previously Presented) Battery cell according to claim 1, characterized in that the solid particles (17) of the porous structure (16) contain an oxygen-free compound, selected from the group consisting of a carbide, nitride, and phosphide.

12. (Original) Battery cell according to claim 11, characterized in that the solid particles (17) contain a carbide, nitride, or phosphide of silicon.

13. (Previously Presented) Battery cell according to claim 1, characterized in that the porous structure (16) is made of solid particles (17) which are not bonded to one another.

14. (Withdrawn) Battery cell according to claim 1, characterized in that the solid particles (17) of the porous structure (16) are bonded to one another by a binder, the volume proportion of the binder to the total solid volume of the porous structure being at most 50%, preferably at most 30%, especially preferably at most 20%, and even more preferably at most 10%.

15. (Previously Presented) Battery cell according to claim 1, characterized in that the porous structure (16) contains a solid salt (26).

16. (Original) Battery cell according to claim 15, characterized in that the solid salt (26) is contained in the porous structure (16) in the form of finely divided particles (27), the salt particles (27) being so much smaller than the solid particles (17) of which the porous structure (16) is made that the salt particles fit into the pores (18) of the porous structure (16).

17. (Previously Presented) Battery cell according to claim 16, characterized in that the size ratio of the average particle size of the salt particles to the average particle size of the solid particles of which the porous structure is made is less than 1:2.

18. (Previously Presented) Battery cell according to claim 16, characterized in that the proportion of the total volume of the salt particles to the total solid volume of the porous structure (16) is at most 20%.

19. (Cancelled)

20. (Previously Presented) Battery cell according to claim 1, characterized in that the active mass is selected from the group consisting of the alkali metals, the alkaline earth metals, and the metals of the second subgroup of the periodic system.

21. (Original) Battery cell according to claim 20, characterized in that the active mass (15) is lithium, sodium, calcium, zinc, or aluminum.

22. (Previously Presented) Battery cell according to claim 1, characterized in that the positive electrode (4) contains a metal oxide.
23. (Original) Battery cell according to claim 22, characterized in that the positive electrode (4) contains an intercalation compound.
24. (Previously Presented) Battery cell according to claim 1, characterized in that the volume proportion of the solid particles in the porous structure is at least 50%.
25. (Previously Presented) Battery cell according to claim 1, characterized in that the volume proportion of the solid particles in the porous structure is at least 55%.
26. (Previously Presented) Battery cell according to claim 1, characterized in that the solid particles of the porous structure have a melting point of at least 400° C.
27. (Previously Presented) Battery cell according to claim 1, characterized in that the material of the solid particles of the porous structure has a thermal conductivity of at least 20 W/mK.
28. (Previously Presented) Battery cell according to claim 16, characterized in that the size ratio of the average particle size of the salt particles to the average particle size of the solid particles of which the porous structure is made is less than 1:4.

29. (Previously Presented) Battery cell according to claim 16, characterized in that the size ratio of the average particle size of the salt particles to the average particle size of the solid particles of which the porous structure is made is less than 1:8.

30. (Previously Presented) Battery cell according to claim 16, characterized in that the proportion of the total volume of the salt particles to the total solid volume of the porous structure is at most 10%.

31. (Previously Presented) Battery cell according to claim 16, characterized in that the proportion of the total volume of the salt particles to the total solid volume of the porous structure is at most 5%.

32. (New) Battery cell according to claim 1, wherein the building of the porous structure does not include an in situ forming of a composite with the substrate of the negative electrode.